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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:		February 2002		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5						R-1 ITEM NOMENCLATURE 0604214N / AV-8B AIRCRAFT					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost	1,608.707		28.134	30.723	18.565	13.253	6.997	7.108	7.229		1,720.716
H0652 AV-8B	1,499.125		6.187	24.754	16.426	13.253	6.997	7.108	7.229		1,581.079
H2634 AV-8B (OSCAR)	109.582		21.947	5.969	2.139						139.637
Quantity of RDT&E Articles	Not Applicable										
(U) A. - MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: (U) (H0652) The program provides AV-8B Design, Development, Integration and Test of the following improvements, including: The Engine Life Management Program (ELMP), Zero Retention Force (ZRF), Escape System, Joint Mission Planning System, and Tactical Aircraft Moving Map Capability. The Engine Life Management Program (ELMP) provides safety of flight and operational readiness improvements for the F402-RR-408 Engine. The Escape System will qualify an improved ejection seat to reduce the risk of injury to aircrew. The Zero Retention Force Solenoid will be interchangeable with the SA-122 on all AV-8B models to provide reliable and dependable operation for in-flight selectability safe ordinance jettison. The Joint Mission Planning System (JMPS) is required as part of the DON directed migration to a common Navy and Marine Corps mission planning system. The Self Contained Approach (SCA) will provide the capability to decelerate and hover Instrument Meteorological Conditions and will direct pilot to proper conditions vice situational guidance. The Tactical Aircraft Moving Map Capability (TAMMAC) is the avionics system that will replace the aging/obsolete AN/ASQ-196 digital map set and the AN/ASQ-194 data storage set presently installed. Advanced weapons coordination includes requirements and interface liaison with efforts such as Joint Stand-Off Weapon (JSOW), AIM-9X, Digital Multiple Carriage Bomb Rack (DMCBR), Advanced Expendables and Electronic Warfare suite upgrades. (U) (H2634) The program provides AV-8B Integration and Test of the following improvements, including: Open System Core Avionics Requirement (OSCAR), Joint Direct Attack Munition (JDAM), HAVEQUICK SINGGARS, and Advanced Mission Computer (AMC). The Open System Core Avionics Requirement (OSCAR) is a form-fit-function replacement of the existing AV-8B mission and stores management computers that would capitalize on commercial-off-the-shelf hardware components and modular high order software language which will provide the necessary computer memory and throughput to integrate current modifications such as JDAM and HAVEQUICK/SINGGARS. On 7 Oct 96 ASN (RD&A) directed the Program Manager to proceed immediately with the OSCAR initiative. On 4 Sep 98, Special Assistant to ASN(RDA) approved OSCAR program restructuring with capitalization on the Advanced Mission Computer (AMC). The title of the Operational Flight Program (OFF) software development effort which integrates the Joint Direct Attack Munitions (JDAM) and HAVEQUICK/SINGGARS into the AV-8B was changed from C2.0 to OC 1.2 to reflect the change of effort in accordance with the ASN (RDA) approved AV-8B Open System Core Avionics Requirements (OSCAR) initiative. OSCAR completed first flight 29 May 1998. Successfully completed Iteration 4 and 5 flight testing and commenced Iteration 6 in first quarter FY01 for OC1.1. Starting flight testing of OC1.2 in fourth quarter of FY01 to continue through to third quarter FY02. (U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT to encompass engineering and manufacturing development of new end items prior to the production approval decision.											

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Exhibit R-2, RDTE Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification								DATE:				
								February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME						
RDT&E, N / BA-5		0604214N / AV-8B AIRCRAFT				H0652 / AV-8B						
COST (\$ in Millions)		Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost		1,499.125		6.187	24.754	16.426	13.253	6.997	7.108	7.229		1,581.079
RDT&E Articles Qty												
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The program provides AV-8B Integration and Test of the following improvements, including: Engine Life Management Program (ELMP), Ejection Seat, Zero Retention Force (ZRF), Tactical Aircraft Moving Map Capability (TAMMAC) and Aircraft handling performance improvements . The Engine Life Management Program (ELMP) provides safety of flight and operational readiness improvements for the F402-RR-408 Engine. The Escape System will qualify a new an improved ejection seat to reduce the risk of injury to aircrew. The Zero Retention Force Solenoid will be interchangeable with the SA-122 on all AV-8B models to provide reliable and dependable operation for in-flight selectability safe ordinance jettison. The Joint Mission Planning System (JMPS) is required as part of the DON directed migration to a common Navy and Marine Corps mission planning system. The Self Contained Approach (SCA) will provide the capability to decelerate and hover Instrument Meteorological Conditions and will direct pilot to proper conditions vice situational guidance. The Tactical Aircraft Moving Map Capability (TAMMAC) is the avionics system that will replace the aging/obsolete AN/ASQ-196 digital map set and the AN/ASQ-194 data storage set presently installed. A/C Handling and performance is all engineering activities for development and design to support aircraft safety flight clearance and concept exploration to support POM objectives.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS (\$K):</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none">- (U) (\$0.250) Continued aircraft handling and performance investigations to improve safety and increase operational performance.- (U) (\$2.997) Commenced design, development, and integration of the AV-8B JMPS.- (U) (\$2.940) Continued design, development, and testing of the Escape System Performance upgrade. <p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none">- (U) (\$2.919) Continue aircraft handling and performance investigations to improve safety and increase operational performance.- (U) (\$5.494) Commence analysis and integration to improve safety of flight and operational readiness of the AV-8B Engine Life Management Program (ELMP).- (U) (\$2.085) Continue design, development, and integration of the AV-8B JMPS.- (U) (\$5.510) Commence design, development, and integration of the AV-8B Zero Retention Force (ZRF) solenoid Harrier Action Review Panel (HARP) initiative.- (U) (\$7.940) Commence development and test of the SCA project.- (U) (\$0.806) Portion of external program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 USC 638 <p>3. FY 2003 PLANS :</p> <ul style="list-style-type: none">- (U) (\$4.172) Continue aircraft handling and performance investigations to improve safety and increase operational performance.- (U) (\$8.384) Continue analysis and integration to improve safety of flight and operational readiness of the AV-8B Engine Life Management Program (ELMP).- (U) (\$2.590) Continue design, development, and integration of the AV-8B JMPS.- (U) (\$1.280) Continue development and test of the SCA project.												

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<u>Line Item No. & Name</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>																			
APN BLI 051400, AV-8B Series Modifications	119.5	73.6	32.2	23.6	27.5	28.0	15.0	40.5																			

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EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			February 2002	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-5	0604214N / AV-8B AIRCRAFT	H0652 / AV-8B		
(U) D. ACQUISITION STRATEGY: All efforts under Aircraft Handling provide investigations and analysis of testing and flight clearance authorization necessary to assess overall system capability and integration of projects. Funding for the Escape System will qualify an improved ejection seat design and will be placed on a cost type fee contract awarded to UPKO and HARCO. Funding for the Engine Life Management Program (ELMP) will be placed on a cost type contract to Rolls Royce to address top readiness degraders, safety of flight issues, engine removal and mission failure drivers, assess life management program issues, and design fixes for any service revealed deficiencies. NAWCWD, China Lake began integration of the AVJMPS program and the SCA program in FY01. Funding for the ZRF solenoid will be placed on a cost type contract awarded to Raytheon to integrate the solenoid to provide safe ordnance jettison and selectable weapons.				
(U) E. SCHEDULE PROFILE:				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>
(U) Program Milestones	1Q/01 AVJMPS PIR/IBR/PDR		3Q/03 Non-Destructive Inspection Complete	2Q/04 AVJMPS Introduction to Fleet
(U) Engineering Milestones	3Q/01 AVJMPS PDR	2Q/02 Begin ZRF Integration 2Q/02 SCA S/W Development 1Q/02 AVJMPS CDR	3Q/03 Fatigue Management System "Module 2" Comp 4Q/03 ZRF CDR 4Q/03 Material Substantiative Comp	
(U) T&E Milestones	1Q/01 Begin Ejection Seat DT-II 3Q/01 Ejection SeatV/V	3Q/02 Initiate ASMET Testing	1Q/03 ELMP Progress Reports 2Q/03 SCA DT 3Q/03 Continue ASMET Testing 4Q/03 SCA OT 4Q/03 AVJMPS OTRR	3Q/03 Continue ASMET Testing 2Q/04 AVJMPS JC1 OT Complete
(U) Contract Milestones		2Q/02 Award ELMP Contract	1Q/03 Award ELMP Contract	1Q/04 Award ELMP Contract 1Q/04 TAMMAC & AVJMPS Integration

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT 0604214N / AV-8B AIRCRAFT			PROJECT NUMBER AND NAME H0652 / AV-8B						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAWC-WD CHINA LAKE	32.234	0.220	10/00	1.496	02/02	1.050	10/02	4.190	39.190	
Operational Test & Evaluation	WX	NAWC-WD CHINA LAKE	19.258	0.200	10/00					2.468	21.926	
Subtotal T&E			51.492	0.420		1.496		1.050		6.658	61.116	
Remarks:												
Contractor Engineering Support	RX	NAWC-AD PATUXENT RIV	46.324	0.125	10/00	0.125	02/02	0.125	10/02	0.350	47.049	
SBIR Assessment						0.806					0.806	
Subtotal Management			46.324	0.125		0.931		0.125		0.350	47.855	
Remarks:												
Total Cost			1,499.125	6.187		24.754		16.426		34.587	1,581.079	
Remarks:												

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RDT&E, N / BA-5		0604214N / AV-8B AIRCRAFT				H2634 / AV-8B (OSCAR)						
COST (\$ in Millions)		Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
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<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Program provides AV-8B Integration and Test of the following improvements, including: Open System Core Avionics Requirement (OSCAR), Joint Direct Attack Munition (JDAM), HAVEQUICK/SINGARS, and Advanced Mission Computer (AMC). OSCAR is a form-fit-function replacement of the existing AV-8B mission and stores management computers that would capitalize on commercial-off-the-shelf hardware components and modular high order software language which will provide the necessary computer memory and throughput to integrate current modifications such as JDAM and HAVEQUICK/SINGARS. On 7 Oct 96 ASN (RD&A) directed the Program Manager to proceed immediately with the OSCAR initiative. On 4 Sep 98, Special Assistant to ASN(RDA) approved OSCAR program restructuring with capitalization on the Advanced Mission Computer (AMC). The title of the Operational Flight Program (OFP) software development effort which integrates the Joint Direct Attack Munitions (JDAM) and HAVEQUICK/SINGARS into the AV-8B was changed from C2.0 to OC 1.2 to reflect the change of effort in accordance with the ASN(RDA) approved AV-8B Open System Core Avionics Requirements (OSCAR) initiative. OSCAR completed first flight 29 May 1998. Successfully completed Iteration 4 and 5 flight testing and commenced Iteration 6 in first quarter FY01 for OC1.1. Starting flight testing of OC1.2 in fourth quarter of FY01 to continue through to third quarter FY02.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none">- (U) (\$1.000) Continued integration and test software to the ARC-210 HAVEQUICK and SINGARS waveform full functionality.- (U) (\$20.947) Continued the Open System Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Stores Management System with Commercial components and continued the development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon. <p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none">- (U) (\$5.788) Continue the Open System Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Stores Management System with Commercial components and continue development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon.-(U) (\$0.181) Portion of external program for Small Business innovation Research (SBIR) assessment in accordance with 15 USC 638 <p>3. FY 2003 PLANS:</p> <ul style="list-style-type: none">- (U) (\$2.139) Continue the Open System Core Avionics Requirements (OSCAR) initiative replacing the Mission Computer and Stores Management System with Commercial components and continued development of the common integrated Night Attack/Radar software to include integration of the 1000lb Joint Direct Attack Munitions (JDAM) weapon.												

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RDT&E, N / BA-5	0604214N / AV-8B AIRCRAFT	H2634 / AV-8B (OSCAR)																										
<p>(U) D. ACQUISITION STRATEGY: PEO(A) ADM Ser DPEO(A)-ACQ2/015-97 dated 6 March 1997 approved the MSII acquisition strategy for OSCAR as an ACAT IVT program. OSCAR avionics CDR was held in January 1998 and completed first flight 29 May 1998. Using the NAWC-WD CPAF contract, funds will be used for basic design definition, drawing development, and OFP development and test. Twelve Mission System Computers and fourteen Warfare Management Computer engineering models have been procured for laboratory and flight test. The NAWC-WD/Boeing follow-on CPAF Contract was awarded on 16 December 1998. The period of performance will be for five years based on the need to complete Open System Core Avionics Requirement (OSCAR) and begin follow-on software block upgrade H2.0. As directed during 4 September 1998 program restructuring, an ACAT redesignation letter was approved changing the OSCAR program from an ACAT IVT program to an ACAT II program. The schedule was revised due to impact of AV-8B F402-RR-408 engine red stripe which resulted in a 5-month developmental test impact delay. Revised schedule has been approved and is currently being executed.</p> <p>(U) E. SCHEDULE PROFILE:</p> <table border="0"> <thead> <tr> <th></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> <th><u>FY 2003</u></th> <th><u>TO COMPLETE</u></th> </tr> </thead> <tbody> <tr> <td>(U) Program Milestones</td> <td></td> <td>2Q/02 HW LRIP Decision</td> <td>2Q/03 OC1.2 - MSIII</td> <td></td> </tr> <tr> <td>(U) Engineering Milestones</td> <td>3Q/01 Begin OC1.2 Integration</td> <td>3Q/02 OC1.2 Integration Complete</td> <td></td> <td></td> </tr> <tr> <td>(U) T&E Milestones</td> <td>4Q/01 Begin DT OC1.2</td> <td>3Q/02 OC1.2 DT Complete 3Q/02 OC1.2 OTRR 4Q/02 Begin OT OC1.2</td> <td></td> <td>2Q/03 OC1.2 OT Complete</td> </tr> <tr> <td>(U) Contract Milestones</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>	(U) Program Milestones		2Q/02 HW LRIP Decision	2Q/03 OC1.2 - MSIII		(U) Engineering Milestones	3Q/01 Begin OC1.2 Integration	3Q/02 OC1.2 Integration Complete			(U) T&E Milestones	4Q/01 Begin DT OC1.2	3Q/02 OC1.2 DT Complete 3Q/02 OC1.2 OTRR 4Q/02 Begin OT OC1.2		2Q/03 OC1.2 OT Complete	(U) Contract Milestones				
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R-1 SHOPPING LIST - Item Nc

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 10 of 13)

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 11 of 13)

R-1 SHOPPING LIST - Item No. 95

UNCLASSIFIED

Remarks:

Subtotal Support				0.467		0.052				0.519
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UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RD&E, N / BA-5			PROGRAM ELEMENT 0604214N / AV-8B AIRCRAFT			PROJECT NUMBER AND NAME H2634 / AV-8B (OSCAR)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAWC-WD CHINA LAKE	13.472	0.228	10/00	1.089	03/02	0.941	10/02		15.730	
Operational Test & Evaluation	WX	NAWC-WD CHINA LAKE	2.503	0.188	10/00	1.310	03/02				4.001	
Subtotal T&E			15.975	0.416		2.399		0.941			19.731	
Remarks:												
SBIR Assessment						0.181					0.181	
Subtotal Management						0.181					0.181	
Remarks:												
Total Cost			109.582	21.947		5.969		2.139			139.637	
Remarks:												

R-1 SHOPPING LIST - Item No. 95

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Exhibit R-2, RD&E Budget Item Justification
(Exhibit R-2, page 13 of 13)